**REMARKS**

The November 26, 2008 Office Action has been carefully reviewed and considered. Claims 1-44 are pending in the present application. Of these, claims 1-12 and 24-35 were previously elected with traverse in response to a prior restriction / election requirement. Claims 1-12 and 24-35 stand rejected. Applicant respectfully submits that all pending claims are patentable over the cited references in view of the amendments and remarks made herein. Action to such affect is respectfully requested.

Independent claims 1 and 24 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication No. 2004/0160922 (Nanda) in view of U.S. Patent No. 5,737,312 (Sasagawa). Applicant respectfully submits that claims 1 and 24 are patentable over Nanda and Sasagawa for several reasons.

First, Nanda does not monitor ongoing reverse link throughput or generate reverse link rate requests based in part on the ongoing reverse link throughput as suggested by the Examiner on p. 3 of the Office Action. Despite Applicant's attempt to show how Nanda does not monitor or use ongoing reverse link throughput to generate reverse link rate requests, the Patent Office continues to find otherwise. Applicant firmly stands by the previous proffered construction of the term 'ongoing reverse link throughput' and that Nanda neither monitors nor uses ongoing reverse link throughput to generate reverse link rate requests.

However, in the interest of moving this case forward in a proactive manner, independent claims 1 and 24 are amended herein to make as explicit as possible what is meant by the term 'ongoing reverse link throughput'. Particularly, claims 1 and 24 now specify that ongoing reverse link throughput is **expressed as current average throughput for data transmissions by the mobile terminal on the reverse link**. This added language is consistent with how the term 'throughput' is used in the specification and also with the plain and ordinary meaning of the term. For example, the Examiner is kindly directed to pp. 845-846 of the Telecommunications

Transmission Handbook (4th ed.), a copy of which is submitted as part of this response. Page 846 of the Telecommunications Transmission Handbook states that throughput represents how much data is put through a channel and is thus an expression of channel efficiency. Throughput varies in response to several factors including data rate, error detection and correction scheme, message handling time and block length. The terms 'throughput' and 'data rate' clearly do not mean the same thing. While throughput is a function of data rate, throughput is also affected by the losses and errors which occur during data transmission.

Claims 1 and 24 are also amended to state that the reverse link rate requests are generated based on **determining whether targeted queuing delay violations are expected given** the transmit data queue sizes and the ongoing reverse link throughput. Nanda does not teach or suggest monitoring ongoing reverse link throughput expressed as current average throughput for data transmissions by a mobile terminal on a reverse link as claimed. Nanda also does not teach or suggest generating reverse link rate requests based on determining whether targeted queuing delay violations are expected given the transmit data queue sizes and the ongoing reverse link throughput as claimed.

Instead, Nanda explicitly states that reverse link data rate is determined based on the transmission deadline assigned to an output queue (see step 405 and the first sentence of paragraph [0028] in Nanda). The second sentence of paragraph [0027] in Nanda states that the output queue transmission deadline is determined "based on the packet arrival time and the maximum permitted delay for that service (or flow)." Packet arrival time cannot be confused with reverse link throughput as explicitly defined in the claims, and neither can the maximum permitted delay parameter. Packet arrival time is the point in time at which a packet is received by a device whereas reverse link throughput is the amount of data transferred from a mobile user to a base station divided by the time taken to transfer it. Clearly, these two terms mean something very different. The maximum permitted delay referred to in Nanda and relied on by

the Examiner in rejecting the claims is a QoS (quality of service) parameter negotiated by a base station (see paragraph [0025] in Nanda). In fact, the last sentence of paragraph [0025] explicitly states that a QoS guarantee like maximum permitted delay is "necessarily probabilistic," meaning that it is not something that is actually measured or monitored.

Thus, Nanda's required reverse link data rate is determined based on packet arrival time and a QoS parameter that is probabilistic in nature. Neither the packet arrival time nor the maximum permitted delay QoS parameter is the same as reverse link throughput as explicitly defined in the claims. For at least these reasons, all claim rejections are in error and must be withdrawn.

In addition, Sasagawa is not analogous art to the claimed invention and therefore cannot be combined in the manner stated in the Office Action to reject the pending claims. A determination of whether a reference is analogous art to the claimed invention requires a two-prong test. First, a determination is made whether the art is from the same field of endeavor. Second, if the reference is not within the field of endeavor, whether it is still reasonably pertinent to the particular problems with which the inventor is involved. *In re Clay*, 23 USPQ2d 1058, 1060, 966 F2d 656, 659 (Fed. Cir. 1992); *In re Deminski*, 230 USPQ 313, 315, 796 F.2d 436, 442 (Fed. Cir. 1986). Sasagawa does not satisfy either prong of this test.

A determination of the first prong requires a comparison of the structure and function of the claimed subject matter to the subject matter disclosed in the reference. *In re Bigio*, 72 USPQ2d 1209, 1212, 381 F3d 1320, 1326 (Fed. Cir. 2004). The claimed invention is directed to wireless reverse link communications, and particularly to generating reverse link rate requests at a mobile station based on determining whether targeted queuing delay violations are expected given transmit data queue size and monitored ongoing reverse link throughput. Sasagawa discloses a cell assembly and disassembly apparatus for a wired ATM network. Clearly Sasagawa is not in the same field of endeavor as the claimed invention.

The second prong asks whether the reference is reasonably pertinent based on the judgment of a person having ordinary skill in the art. *In re Kahn*, 78 USPQ2d 1329, 1336, 441 F3d 977, 987 (Fed. Cir. 2006). The determination of pertinence should use common sense in deciding which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor. *In re Wood*, 202 USPQ 171, 174, 599 F2d 1032, 1036 (CCPA 1979). Sasagawa also fails as analogous art under the second prong because it is not reasonably pertinent to the particular problems with which the inventors of the claimed invention were involved. The inventors of the present invention were concerned with implementing reverse link rate control at a mobile station. For example, see the Summary section of the instant application.

It would not make common sense or be logical for a designer who is addressing reverse link rate control at a mobile station to be drawn to generally the field of wired ATM networks, or more particularly to Sasagawa's ATM cell assembly and disassembly apparatus. The disclosure of Sasagawa is silent regarding wireless reverse link communications, or manners of implementing reverse link rate control at a mobile station. Therefore, Sasagawa is not analogous art and thus Applicant respectfully requests the Examiner to withdraw all claim rejections.

Respectfully submitted,
COATS & BENNETT, P.L.L.C.

Mark R. Bilak

Dated: January 23, 2009

Mark R. Bilak
Registration No.: 47,423
Telephone: (919) 854-1844
Facsimile: (919) 854-2084

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# Telecommunications Transmission Handbook

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Roger L. Freeman

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The BCD is a compromise code assigning 4-bit binary numbers to the digits between 0 and 9. The BCD equivalents to decimal digits appear as follows:

| Decimal Digit | BCD Digit | Decimal Digit | BCD Digit |
|---|---|---|---|
| 0 | 1010 | 5 | 0101 |
| 1 | 0001 | 6 | 0110 |
| 2 | 0010 | 7 | 0111 |
| 3 | 0011 | 8 | 1000 |
| 4 | 0100 | 9 | 1001 |

To cite examples, consider the number 16; it is broken down into 1 and 6. Therefore its BCD equivalent is 0001 0110. If it were written in straight binary notation, it would appear as 10000. The number 25 in BCD combines the digits 2 and 5 above as 0010 0101.

## 13.4 ERROR DETECTION AND ERROR CORRECTION

### 13.4.1 Introduction

In the transmission of data the most important goal in design is to minimize the error rate. Error rate may be defined as the ratio of the number of bits incorrectly received to the total number of bits transmitted. According to CCITT the design objective is an error rate no poorer than one error in $1 \times 10^6$ and in North America many circuits display an error rate better than one error in $10^{10}$.

One method to minimize the error rate is to provide a "perfect" transmission channel, one that will introduce no errors in the transmitted information by the receiver; unfortunately, the engineer designing a data transmission system can never achieve that perfect channel. Besides improvement of the channel transmission parameters themselves, the error rate can be reduced by forms of systematic redundancy. In old-time Morse code on a bad circuit words often were sent twice; this is redundancy in its simplest form. Of course, it took twice as long to send a message. This is not very economical if useful words per minute received is compared to channel occupancy.

This brings up the point of channel efficiency. Redundancy can be increased such that the error rate could approach zero. Meanwhile the information transfer or *throughput* across the channel also approaches zero. Hence unsystematic redundancy is wasteful and merely lowers the rate of useful communication. Maximum efficiency or throughput could be obtained in a digital transmission system if all redundancy and other code elements, such as start and stop elements, were removed from the code, and, in addition, if advantage were taken of the statistical phenomenon of our written language by making high-usage letters, such as E, T, and A, short in code length and low-usage letters, such as Q and X, longer.

### 13.4.2 Throughput

The *throughput* of a data channel is the expression of how much data are put through. In other words, throughput is an expression of channel efficiency. The term gives a measure of useful data put through the data communication link. These data are directly useful to the computer or data terminal equipment (DTE).

Therefore on a specific circuit, throughput varies with the raw data rate; is related to the error rate and the type of error encountered (whether burst or random); and varies with the type of error detection and correction system used, the message handling time, and the block length, from which we must subtract the "nonuseful" bits such as overhead bits. Among overhead bits we have parity bits, flags, and cyclic redundancy checks.

### 13.4.3 The Nature of Errors

In data/telegraph transmission an error is a bit that is incorrectly received. For instance, a 1 is transmitted in a particular time slot and the element received in that slot is interpreted as a 0. Bit errors occur either as single random errors or as bursts of error. In fact, we can say that every transmission channel will experience some random errors, but on a number of channels burst errors may predominate. For instance, lightning or other forms of impulse noise often cause bursts of errors, where many contiguous bits show a very high number of bits in error. The IEEE defines error burst as "a group of bits in which two successive bits are always separated by less than a given number of correct bits" (Ref. 1).

### 13.4.4 Error Detection and Error Correction Defined

The data transmission engineer differentiates between error detection and error correction. Error detection identifies that a symbol, character, block,* packet,* or frame* has been received in error. As discussed earlier, parity is primarily used for error detection. Parity bits, of course, add redundancy and thus decrease channel efficiency or throughput.

Error correction corrects the detected error. Basically, there are two types of error correction techniques: forward-acting (FEC) and two-way error correction (automatic repeat request [ARQ]). The latter technique uses a return channel (backward channel). When an error is detected, the receiver signals this fact to the transmitter over the backward channel, and the block of information containing the error is transmitted again. FEC utilizes a type of coding that permits a limited number of errors to be corrected at the receiving end by means of special coding and software (or hardware) implemented at both ends of a circuit.

*A block, packet, or frame is a group of digits or data characters transmitted as a unit over which a coding procedure is usually applied for synchronization and error control purposes.